

**CALCIUM SULFONATE TOPCOAT FOR STEEL MSP-00-07A**

**1.0 Description.** This specification covers various colors of calcium sulfonate topcoat paints for steel. The color to be used is specified elsewhere in this contract and shall comply with all requirements specified herein. Calcium sulfonate topcoat shall be a medium to light gray, brown, green or tan low gloss coating as specified in the contract for use over calcium sulfonate penetrating sealer or calcium sulfonate primer. Calcium sulfonate topcoat is intended for brush, roller or spray application over rust inhibiting primer paints, over itself or over other oleoresinous paints. This paint is primarily intended as a topcoat for a calcium sulfonate corrosion inhibitive primer, and is to be applied in accordance with SSPC-PA 1 "Shop, Field, and Maintenance Painting". It is suitable for in-place structures and not as a shop-applied finish.

**2.0 Composition.** The primary resin used to manufacture the calcium sulfonate topcoat shall be a modified overbased crystalline calcium sulfonate that creates a highly polar complex capable of protecting the underlying steel from corrosion. In addition to the calcium sulfonate complex, the paint shall also contain film forming oleoresinous compounds that act to reduce tack in the dry film.

**3.0. Properties.** The mixed coating properties shall be as follows

Item	Requirement			
	Brown	Gray	Tan	Green
Color, Federal Standard 595b	30045	26373	23522	24260
Modified Crystalline Overbased Calcium Sulfonate, per cent by weight, min.	15			
Coarse Particles and Skins as retained on No. 325 (45 µm) mesh sieve, percent, max.	1.0			
Viscosity, 77 F (25 C), KU	90-130			
Fineness of Grind, Hegman Units, min.	5			
Drying Time, 2-3 mils (50-75 µm), hours				
Dust Dry	1 - 4			
Tack Free	5 - 12			
Dry Firm	24 - 48			
Volatile Organic Content (VOC), lbs/gal (g/L), max.	3.5 (420)			
Sag Resistance, Mils (µm)	12+ (300+)			
QUV Weathering Resistance, 1000 hrs. (4 mil (100µm) dry film over SSP-SP-5 blasted cold rolled steel - 1-2 mil (25-50 µm profile)	No excessive chalking, blistering, or change in color.			
Salt Spray Resistance, 1000 hrs (4 mil (100 µm) dry film over SSP-SP-5 blasted cold rolled steel - 1-2 mil (25-50 µm) profile)	No more than 1 percent rust under-cutting, blistering or peeling.			

**3.1 Pigment Settlement.** The paint shall show perfect suspension (10 rating) when tested as specified in ASTM D 869, when stored for six months.

**3.2 Working Properties.** The paint shall be uniform and easily spray-applied when tested in accordance with Federal Standard No.141, Method 4331. The primer and topcoat shall show no streaking, running or sagging after drying.

**3.3 Storage.** The paint shall show no thickening, curdling, gelling, or hard caking when tested

as specified in Federal Standard No.141, Method 3011 after storage for six months from date of delivery in tightly covered containers at a temperature of not less than 50 F or more than 110 F (less than 10 C or more than 43 C).

**4.0 Test Methods.** The test methods used to verify compliance with the properties specified shall be as follows:

<b>American Standards for Testing and Materials (ASTM)</b>	
G154	Practice for Operating Light- and Water-Exposure Apparatus
B117	Salt Spray (Fog) Testing
D562	Consistency of Paints Using the Stormer Viscometer
D1210	Fineness of Dispersion of Pigment-Vehicle Systems
D3278	Flash Point of Liquids by Seta Flash Closed Tester
D3960	Volatile Organic Content (VOC) of Paints

<b>Federal Test Method Standard No. 141</b>	
Method 4061	Drying Time
Method 4494	Sag Test (multi-notch blade)

**5.0 Marking.** All containers shall be legibly marked with the following information:

Name:

Specification:

Color:

Lot Number:

Date of Manufacture:

Quantity of Paint in Container:

Information and Warnings as may be required by Federal and State Laws.

Manufacturer's Name and Address:

## **6.0 Application.**

**6.1** This paint is intended for use as a finish coat over a Calcium Sulfonate Primer. The primer to be topcoated shall be free of all oil, grease and loose dust or dirt.

**6.2** The undercoat shall be allowed at least a two to four hour cure period at 70 F to 80 F (21 C to 127 C) ambient temperature (longer at lower temperatures) before topcoating. The ambient conditions at application shall be over 0 F (-18 C) and the surface temperature shall be at least 5 F (-15 C) above the dew point. Although calcium sulfonate/alkyd coatings will cure at very low temperatures, before application the surface must be free of ice or ice crystals associated with extreme temperature fluctuations. Do not paint during rain or snowy conditions.

**6.3** Mix paint by hand before application. No pigment settlement should be apparent. Screen paint before applying. Thin paint only when necessary using only mineral spirits. For airless spray applications, solvent reduction is usually not needed.

**6.4** Apply paint by spray, brush or roller to achieve a nominal 5 mil (125  $\mu$ m) dry film thickness or approximately 7 to 8 mils (175  $\mu$ m to 200  $\mu$ m) wet film thickness. The theoretical spreading rate for a 5.0 mil (125  $\mu$ m) dry film is 204 square feet/US gallon (5.0 m<sup>2</sup>/L). Actual spreading rates can be significantly lower.

**7.0 Manufacturer and Brand Name Approval.** Prior to approval and use of the calcium sulfonate topcoat, the manufacturer shall submit to Project Operations a one-gallon (4 L) sample of the proposed material. The manufacturer shall also submit a certified test report from an approved independent laboratory showing specific test results for salt spray resistance and QUV weathering resistance of steel panels prepared and tested as specified in Sec 3.0.

**7.1 Final Acceptance.** Final acceptance of calcium sulfonate topcoat will be based on a manufacturer's certification submitted by the contractor to the engineer and upon results of tests made on samples of the material. Each lot will be sampled and tested prior to approval and use.

**7.1.1** Samples of any or all ingredients used in the manufacture of this paint may be requested by the purchaser and shall be supplied upon request, along with the supplier's name and identification for the material.